



MSTV Mini-Symposium Preview

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TARDEC-RBG-CASSI

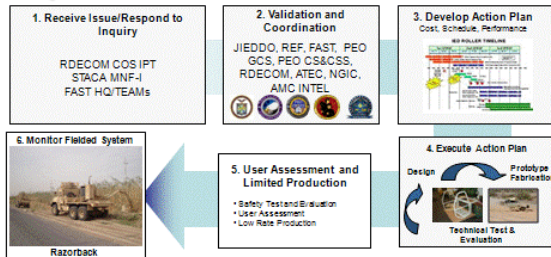
GVSETS

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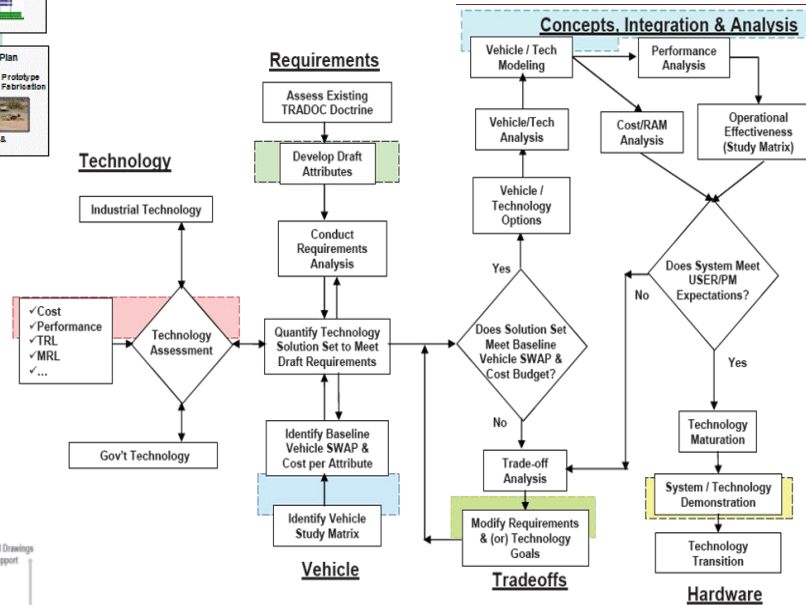
TARDEC as the Ground System Integrator

MSTV
MODELING AND SIMULATION, TESTING AND VALIDATION

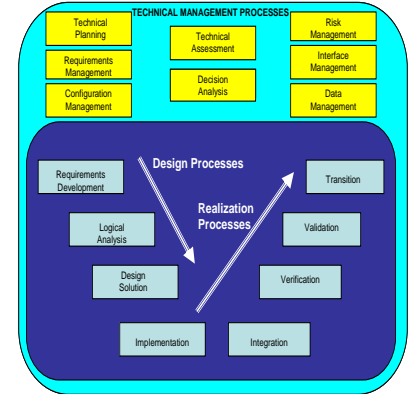
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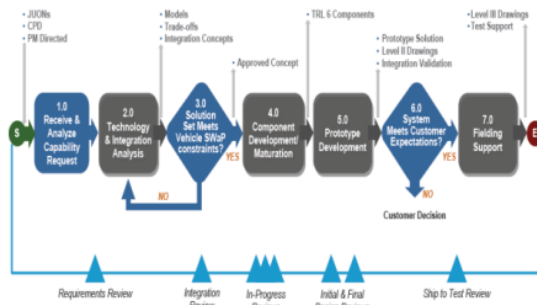
CASSI



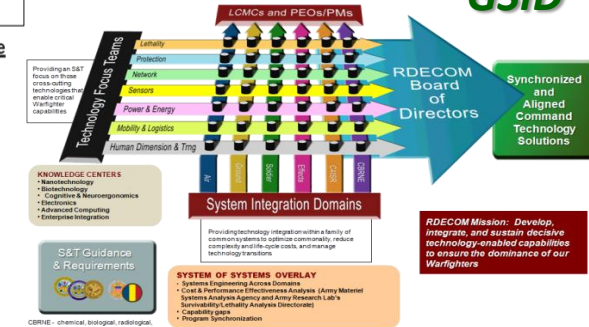
SYSTEMS ENGINEERING PROCESS MODEL



GVIC



GSID



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CASSI's Role In Systems Integration

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MODELING AND SIMULATION, TESTING AND VALIDATION

Mission:

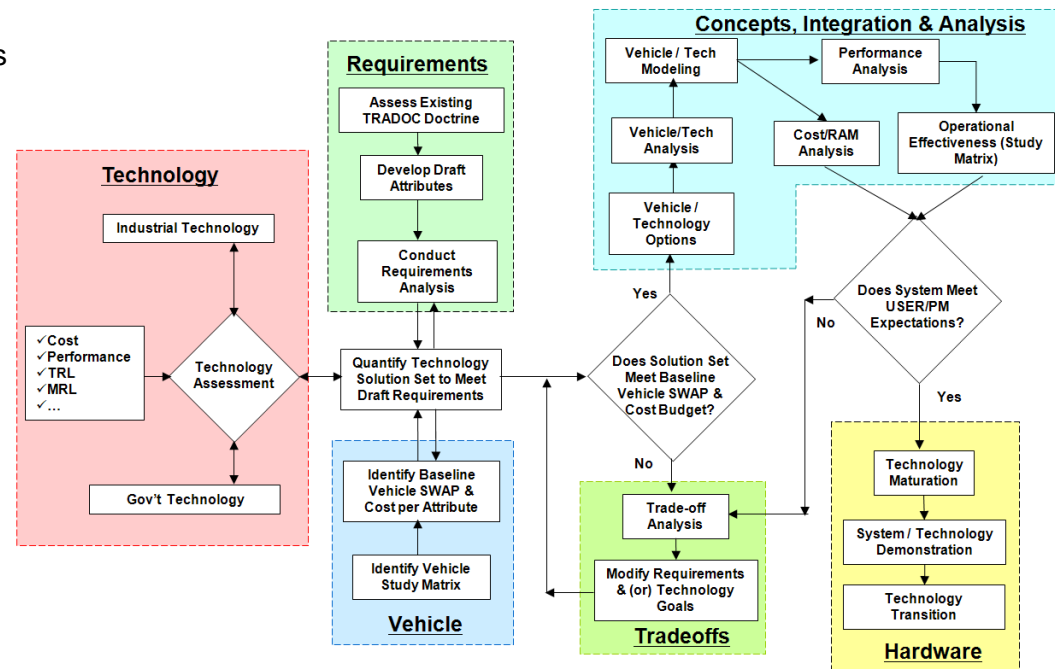
- Provide Rapid Assessment and Integration Services to both Technology and System/Platform Development Programs
 - Throughout the Lifecycle (Rqts – Tech – Int'n – Demo – Prod – Sust – PiP)
 - Consider Warfighter, System, and System-of-Systems Contexts

Objectives:

- Provide Systems/SoS Perspective to Combat Developer, PM and Tech Developer on Requirements, Tradeoffs & Integration
- Provide SWAP, Performance, Operational, Cost, & Sustainment Impacts
- Provide and Share Configuration Managed Data on Technologies, Systems, M&S and related programs/processes
- Explore Multiple Options and Trades Rapidly

Methods:

- Develop Vehicle Concepts & Perform Concept Analysis and Trade Studies
- Perform System Assessments using Physics-based, Statistical-based, HW/Man-in-the-Loop, and Distributed Simulation Tools
- Develop Integrated System Level Demonstrators



CASSI Functions

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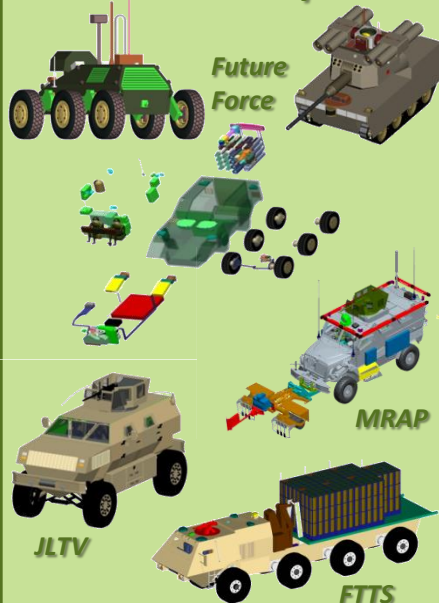
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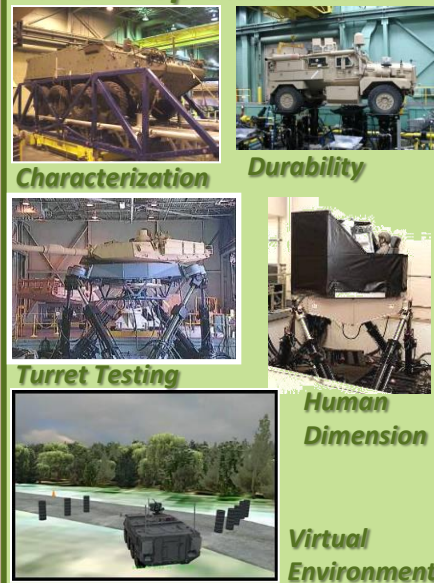
Advanced Concepts



Analytics



Hardware & Man-In-The-Loop Simulation



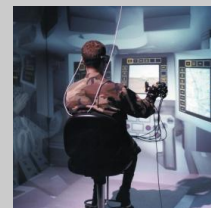
Integration & Demonstrators



HPC & Data Management



HPC



CAVE



ACE

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MSTV VIP Speakers

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Mr. Scott Rutter – BAE Systems

Business Development Director

Modeling and Simulations: Meeting the Needs for the Future Force

Mr. Scott Stilson – General Dynamics Land Systems

Chief Engineer, Stryker Modernization (S-Mod) Program

The Application of Modeling and Simulation to the S-Mod Program



Power and Energy/Mobility Session

Mr. Mike Pozolo – TARDEC

Dr. James Critchley – BAE Systems

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****Interior Permanent Magnet Machine for Use in the XM1124 Hybrid Electric HMMWV***

Justin Owen and Mike Marcel – DRS Test & Energy Management, LLC

Wes Zanardelli – TARDEC

Simulation-based Design for Actively Controlled Suspension Systems

Joseph H. Beno, Damon A. Weeks and Jason R. Mock – University of Texas

Fuel Economy and Mobility of Multiwheel Drive Vehicles

Jeremy Gray – TARDEC

Vladimir Vantsevich – Lawrence Technological University

A Modular Model Architecture in Modelica for Rapid Virtual Prototyping of Conventional and Hybrid Ground Vehicles

John Batteh & Michael M. Tiller – Emmeskay

Family of Medium Tactical Vehicle Transmission Fuel Economy Study: Evaluation of AMT Performance Using Experimental and Analytical Methods

Matt Van Benschoten & Evan Nelson – Roush Industries

Time-dependent Simulation Methods for Vehicle Thermal Management

Dr. Ilhan Bayraktar – Oshkosh Corporation



Reliability Modeling Session

Dr. David Lamb – TARDEC

Dr. David Mortin – AMSAA

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A Robust Durability Process for Military Ground Vehicles

Nammalwar Purushothaman, Paramsothy Jayakumar & James Critchley – BAE Systems

Sandip Datta & Venkat Pisipati – TAC World Wide

An Integrated High-performance Computing Reliability Prediction Framework for Ground Vehicle Design Evaluation

Dan Ghiocel – GP Technologies, Inc.

Dan Negrut – University of Wisconsin

David Lamb & David Gorsich – TARDEC

Influence of Loading Distribution of M1 Suspension on Predicted Track System Durability

David Ostberg & Bill Bradford – TARDEC

Vehicle Prognostics: Understanding Usage Severity and Potential Damage Accumulation for Combat Vehicle Suspension Components

Mark Pompetzki & Brian Dabell – HBM-nCode Products

Joseph Gothamy & Jim Bechtel – TARDEC

Reliability and Complexity of Unmanned Ground Vehicles

Arati Dixit & Dr. Harpreet Singh – Wayne State University

Grant R. Gerhart – TARDEC



Human Dimension Session

Mr. Harry J. Zywiol, Jr. – *TARDEC*

Dr. Kaleb McDowell – *ARL*

Mr. Rob Smith – *TARDEC*

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MODELING AND SIMULATION, TESTING AND VALIDATION



Human Dimension Introduction — The Army's Need for Cognitive Engineering

Kaleb McDowell – *ARL*

Harry J. Zywiol Jr. – *TARDEC*

The Utility of a Ride Motion Simulation in a Neuroergonomic Approach to Systems Design

Kelvin S. Oie – *ARL*

Victor Paul – *TARDEC*

Understanding Soldier Tasks for Effective Simulation

Teena Garrison & Mark Thomas – *Mississippi State University*

Simulating Crew Ingress and Egress for Ground Vehicles

Matthew P. Reed – *University of Michigan*

Introduction of a Ground Vehicle Integrated Thermal Model

Jing Pang, Daniel Chue & Mark Rupersburg – *GDLS*

Development of a Validated Thermal Model of Air Conditioning Performance in a Ground Vehicle

Joshua Pryor, Julia Mao, Aaron Ditty & Pete Rynes – *ThermoAnalytics*

Rob Smith – *TARDEC*



Hardware-in-the-Loop Session

Mr. Scott Lohrer – *TARDEC*

Mr. Wilford Smith – *SAIC*

Dr. TC Lin – *BAE Systems*

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A Reconfigurable HIL Test Stand

Ashok Nedungadi & Karl Kreder– *Southwest Research Institute*

A Combat Systems Integration Lab for Engineering Life Cycle Support

Dr. Kevin Chang, Christopher Johnson, TC Lin, Kasra Naghshineh, Sun Kwon & His Shang Li – *BAE Systems*

Investigation of Control Algorithms for Tracked Vehicle Mobility Load Emulation for a Combat Hybrid Electric Power System

Jarrett Goodell & Wilford Smith – *SAIC*

Byron Wong – *TARDEC*



Gaps and Challenges Session

Dr. Matthew P. Castanier – *TARDEC*

Mr. Mark Rupersburg – *GDLS*

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Simulation-based Reliability Systems: A University/Industry Consortium Focused on Simulation-based Solutions for Ground Vehicles

Roger L. King – *Mississippi State University*

Paul Decker & David Gorsich – *TARDEC*

Structural Topology Optimization for Blast Mitigation Using Hybrid Cellular Automata

John Goetz, Huade Tan, Andres Tovar & John E. Renaud – *University of Notre Dame*

System Design by a Network of Optimizations

Dr. Jim He – *Michigan Engineering Services, LLC*

Christopher G. Hart & Nickolas Vlahopoulos – *University of Michigan*

A Probabilistic Multidisciplinary Design Optimization Approach with Application to Ground Combat Systems Design

Vik Ganesan – *GDLS*

Assessment of a Bayesian Model and Test Validation Method

Y. Pai, Michael Kokkolaras, Gregory M. Hulbert & Panos Papalambros – *University of Michigan*

Mike Pozolo – *TARDEC*

Y. Fu, R.J. Yang & S. Barbat – *Ford Motor Company*



Written-only Papers

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Engine, Battery, and Vehicle Simulation Strategies for Transmission Testing

Bryce Johnson – *HORIBA Instruments, Inc.*

Analysis of Spinal Compression in Blast Environments

James Eridon – *General Dynamics Land Systems*

Applicability and Simulation of Federal Automotive FMVSS Standards in Light Military Vehicle Occupant Protection Development

Nripen Saha and Mark Rupersburg – *General Dynamics Land Systems*